

Name: _____

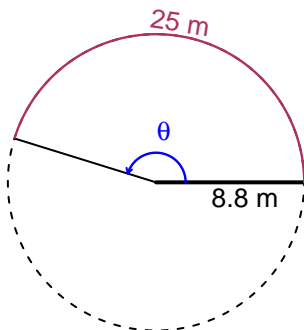
Date: _____

Trig Final (TEST v653)

- You can use a calculator (like [Desmos](#))
- You should have a unit-circle with special angles and coordinates marked.

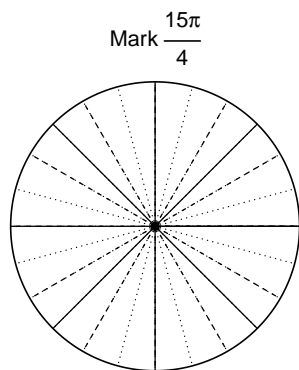
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The arc length is 25 meters. The radius is 8.8 meters. What is the angle measure in radians?

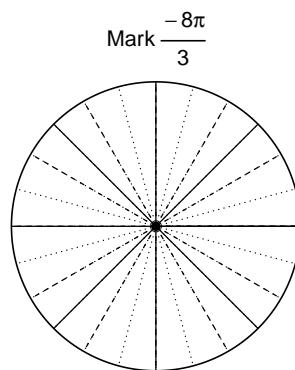


Question 2

Consider angles $\frac{15\pi}{4}$ and $\frac{-8\pi}{3}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\cos\left(\frac{15\pi}{4}\right)$ and $\sin\left(\frac{-8\pi}{3}\right)$ by using a unit circle (provided separately).



Find $\cos(15\pi/4)$



Find $\sin(-8\pi/3)$

Question 3

If $\tan(\theta) = \frac{-40}{9}$, and θ is in quadrant II, determine an exact value for $\sin(\theta)$.

Question 4

A mass-spring system oscillates vertically with a midline at $y = -5.47$ meters, a frequency of 6.95 Hz, and an amplitude of 3.88 meters. At $t = 0$, the mass is at the minimum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).